Animal identification and data management systems at country level

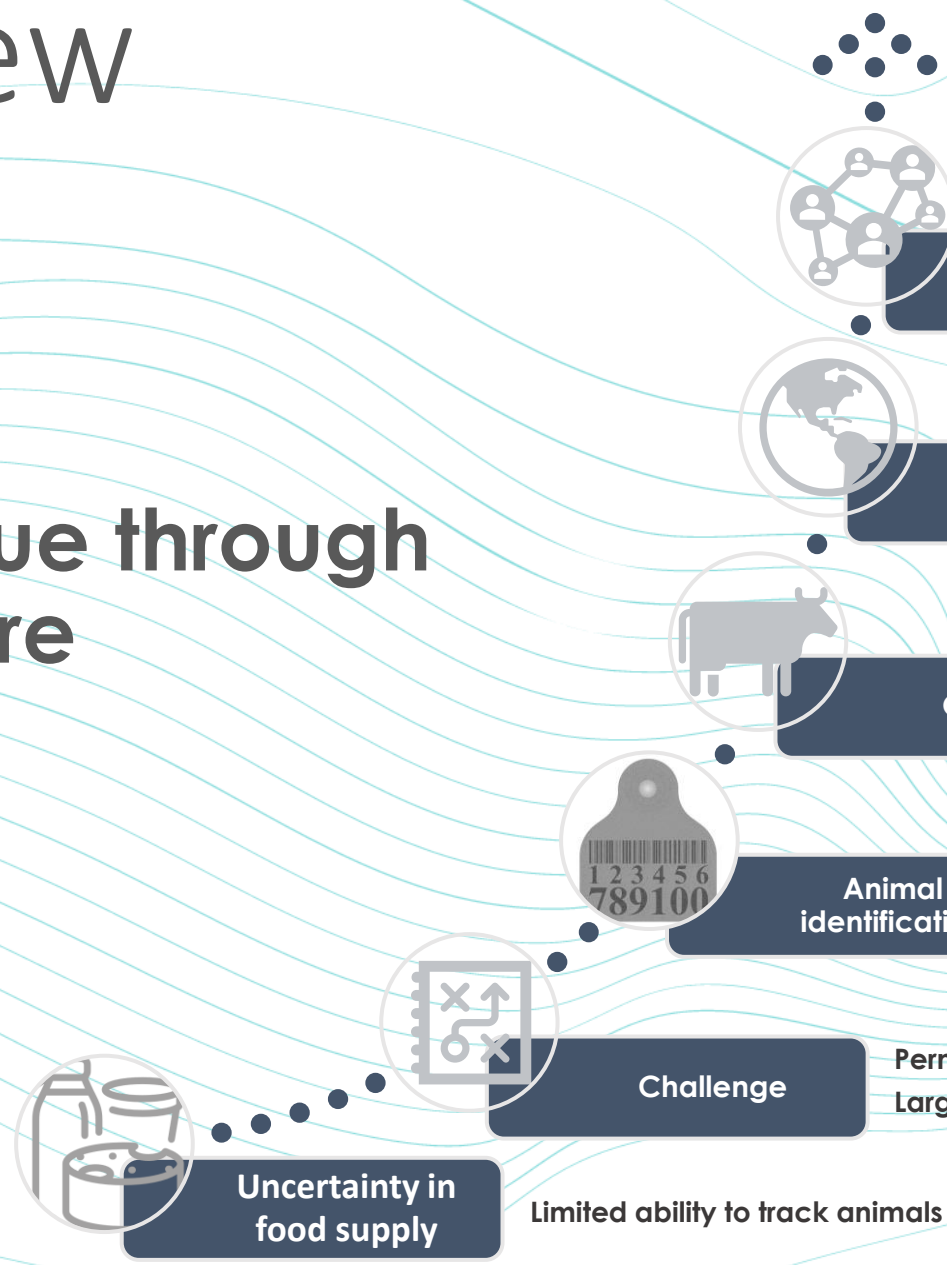
SmaRT Ethiopia: Consolidating and capitalizing on experiences and going beyond

Dr. Bruno Santos

ICARDA
Science for resilient livelihoods in dry areas

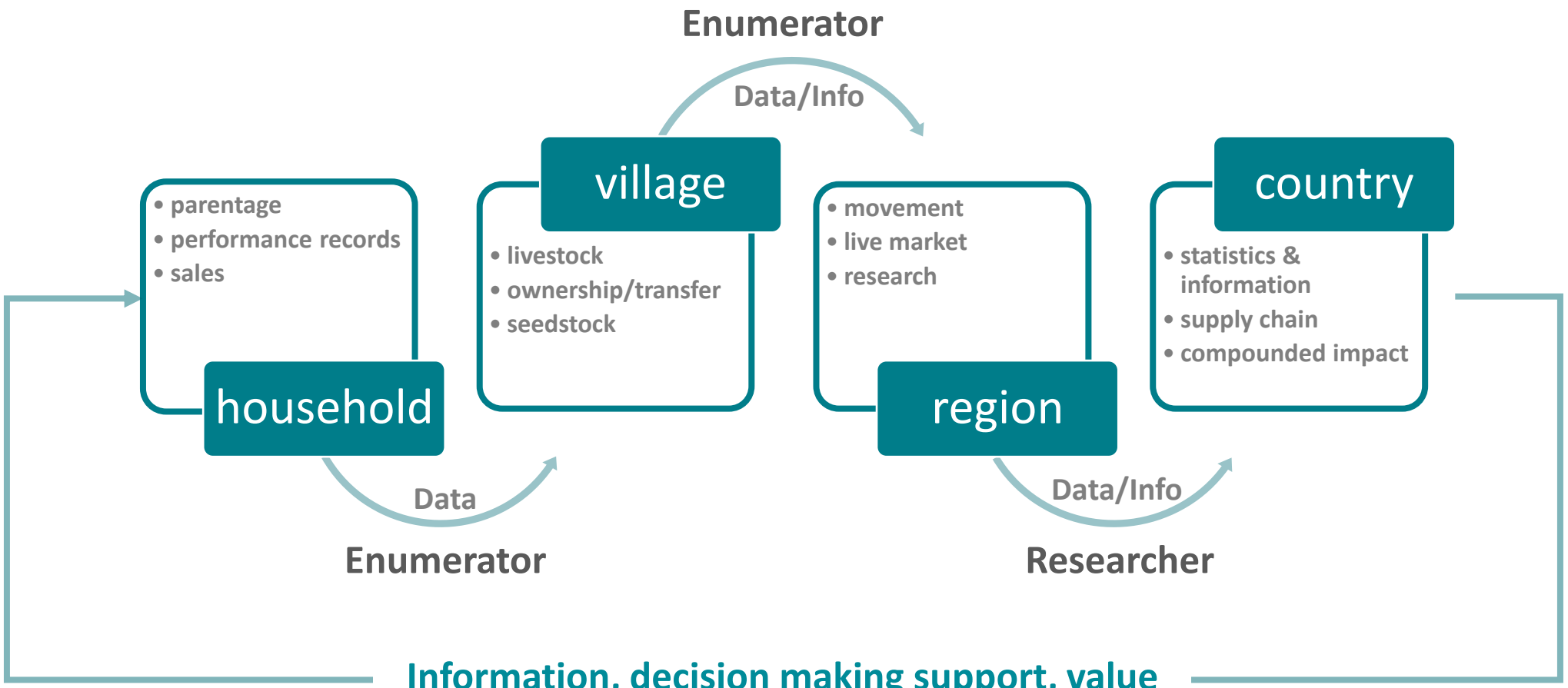
Overview

Adding value through data capture

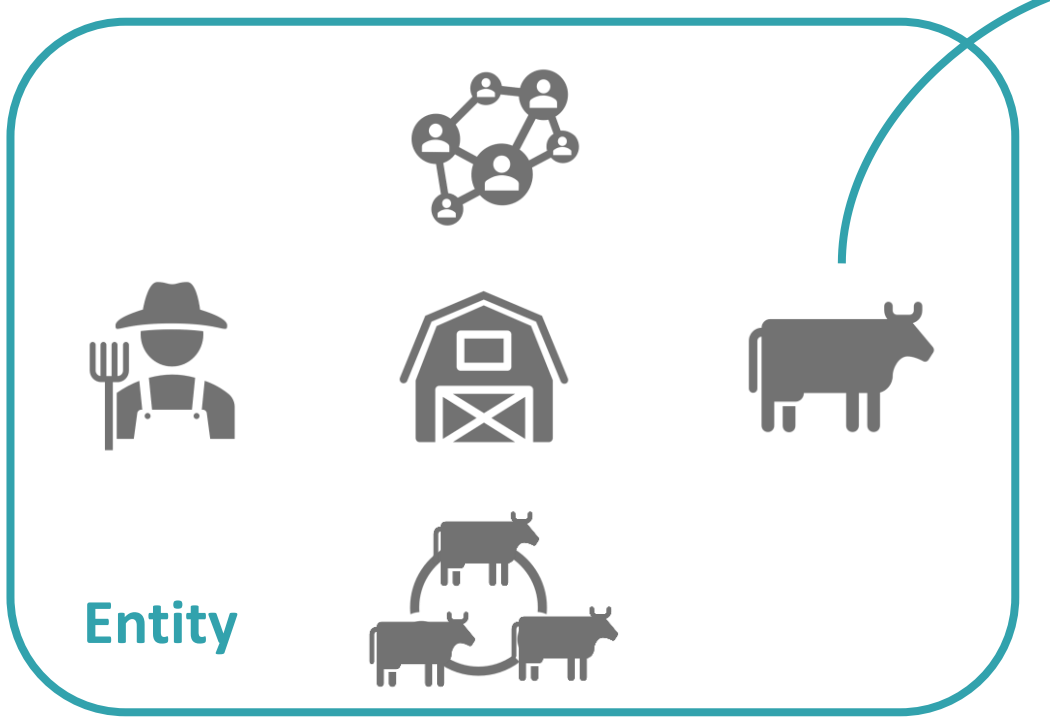


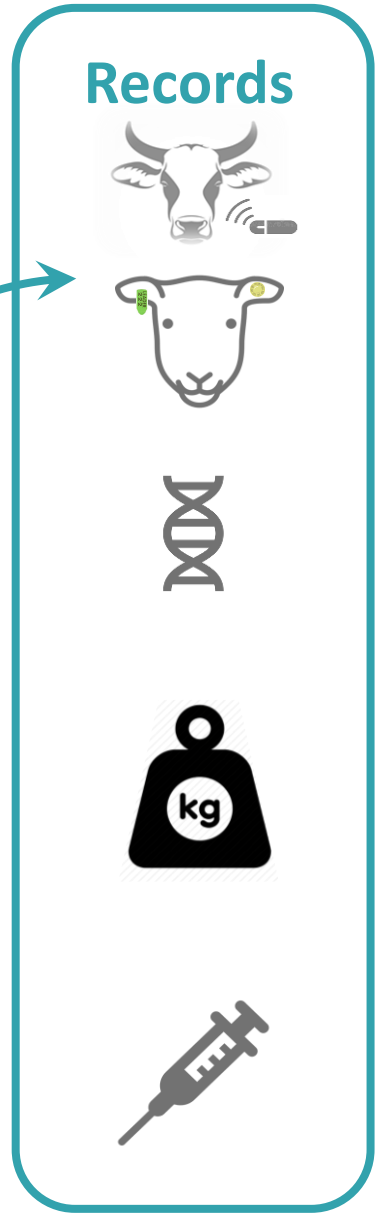
Importance of tagging and proper identification of livestock

Data & information



A data system





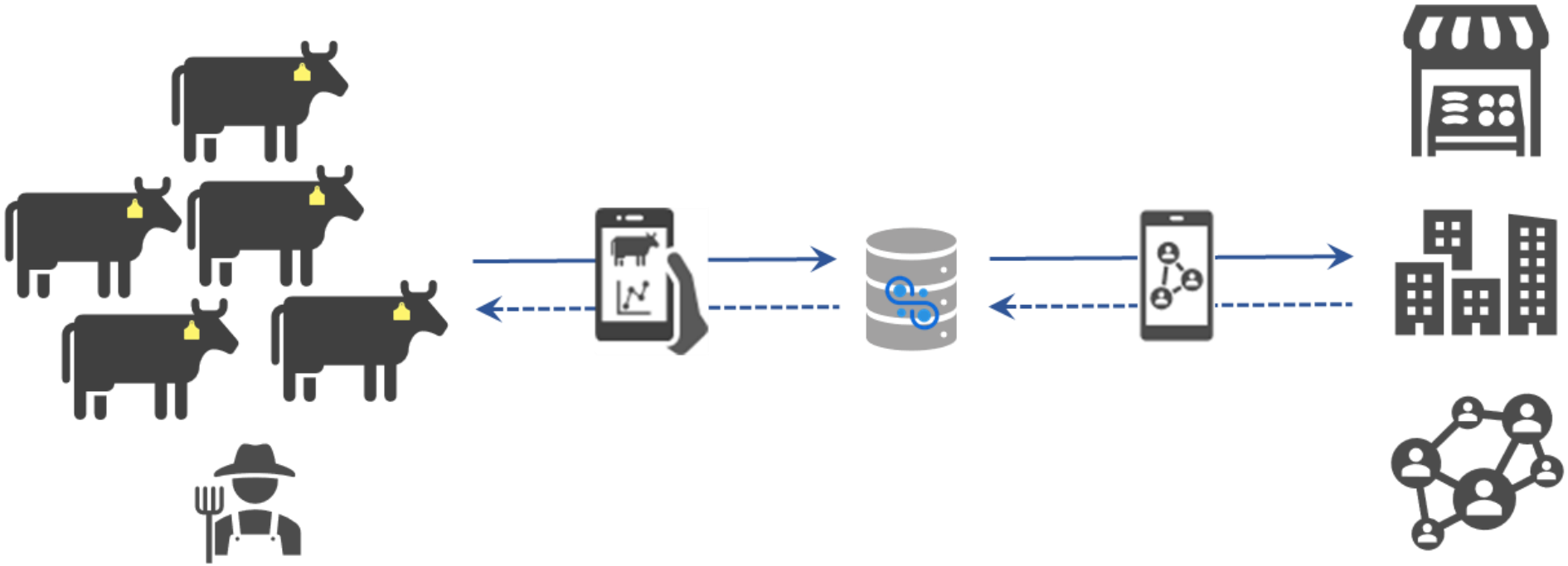
Events

Birth time
Calving
Parentage

Weighing
Weaning
Slaughter
Sale

Health occurrences
Vaccination
Treatment
Deworming
Mortality

Delivering the concept



Animal tagging

Current situation

- Occasional identification of sheep and goats born in Ethiopia
- Most identified individuals are used for fairs and events

Communication with farmers

- Importance of identifying individuals for
  - Identify productive animals
  - Monitor performance
  - Synchronize animal identifiers across databases
  - Animal movements
  - Tracking and monitoring diseases
- What is the direct benefit for farmers from tagging
  - Detect unproductive animals
  - Predict available animals for sale
  - Monitor liveweight gain

Opportunity relies on

- An effective way to identifying animals permanently and uniquely
- Unique numbers should be read visually as well as electronically captured so that the information (or data) is securely transferred to a database to be analysed or simply monitored/traced
- Creating reliable information depends on data integrity
- Commercialization through more secure and efficient channels

Challenges of animal identification

Main challenges are

- Unique number identifying individual animals
- Database structure is fundamental
- Electronic reading of the animal's identity and prompt transfer of information to a database
- Lost animal identification compromises all efforts and creates loss of information
- High-quality tags and RFID are relatively expensive
- Distribution of standard tags across an entire population can be very challenging

Structure required

Outcomes rely on

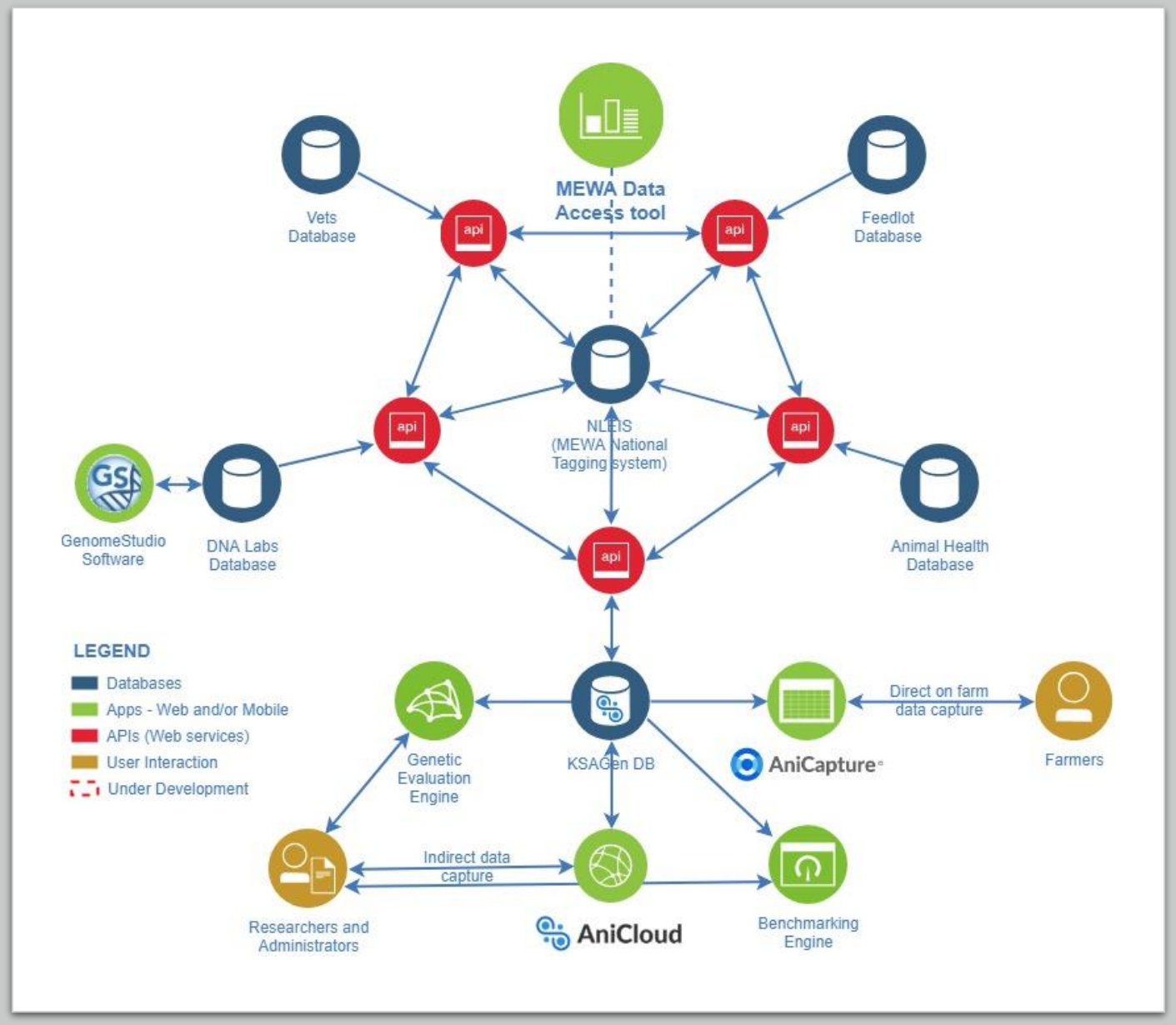
Database(s) of animal health and performance data, supporting farmer decision making and industry integration

A sustainable business and service model that includes all stakeholders (mainly farmers)

Information to support impact assessment, R&D, and policy making

A central database needs

- Flexible database structure
- Hub application (dashboard) for overall visualization for monitoring impact
- Coordination of dispersed data sources
- Offline capture data capability
- Structured, verified data in, defined by international standards e.g. ICAR
- Knowledge out supporting farmer decisions
- Individual animal level information driving both genetic improvement and improved management practices



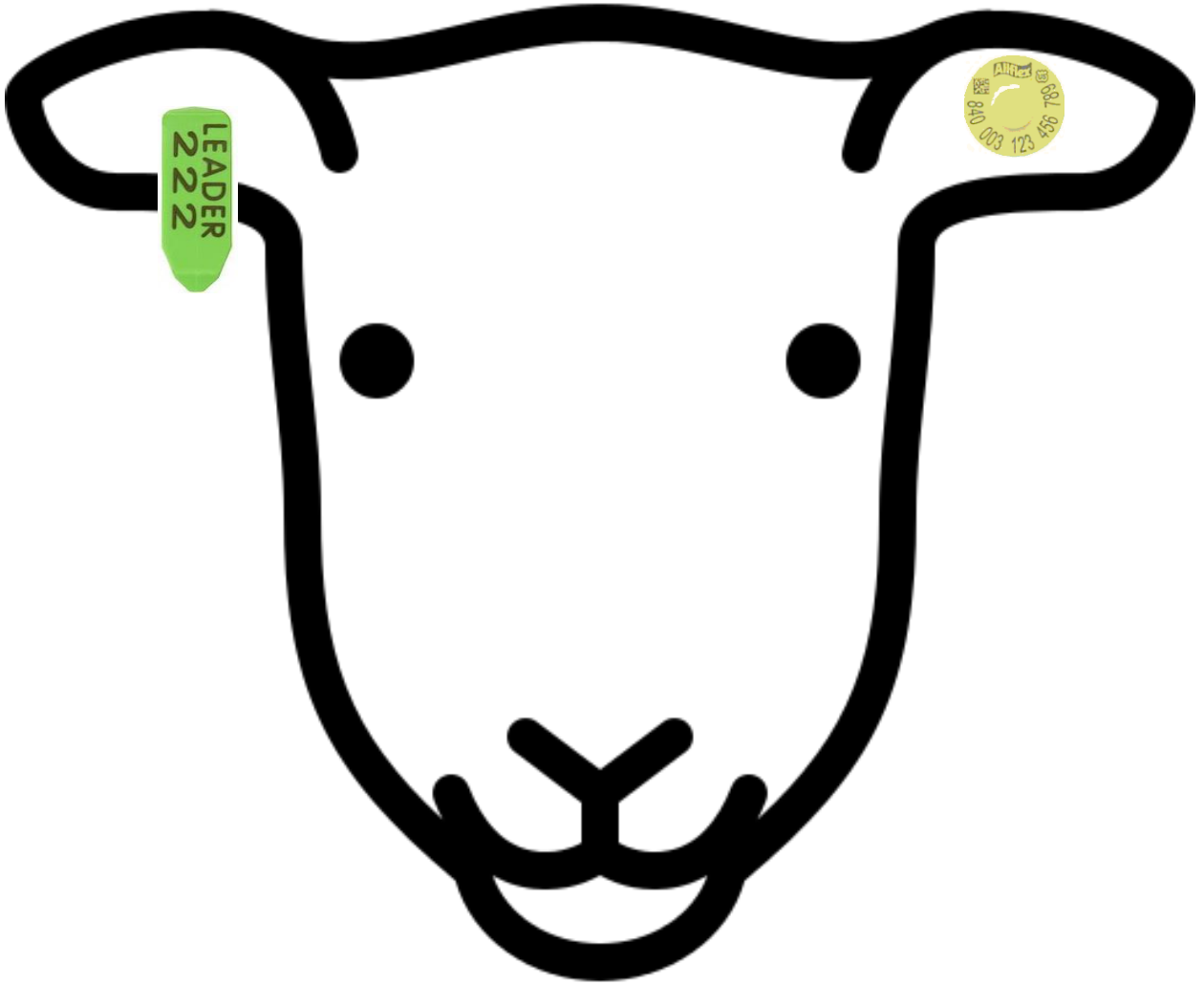
Other challenges

- Defining a identification strategy across multiple scenarios
- Timing of tagging with different identification methods
  - Ear tags are applied at birth (lambing, kidding, calving)
  - Additional tag added in the next visit of the technician or by the farmer at marking or weaning
  - An additional identification method can be used when animals are traded (if needed).
- Training on tagging practices and procedures to technicians and farmers are extremely important
- Creating engagement from the farming community can be difficult if farmers
  - Do not understand the value of animal identification
  - Face prohibitive costs
  - Do not have easy access to tags and identification equipment

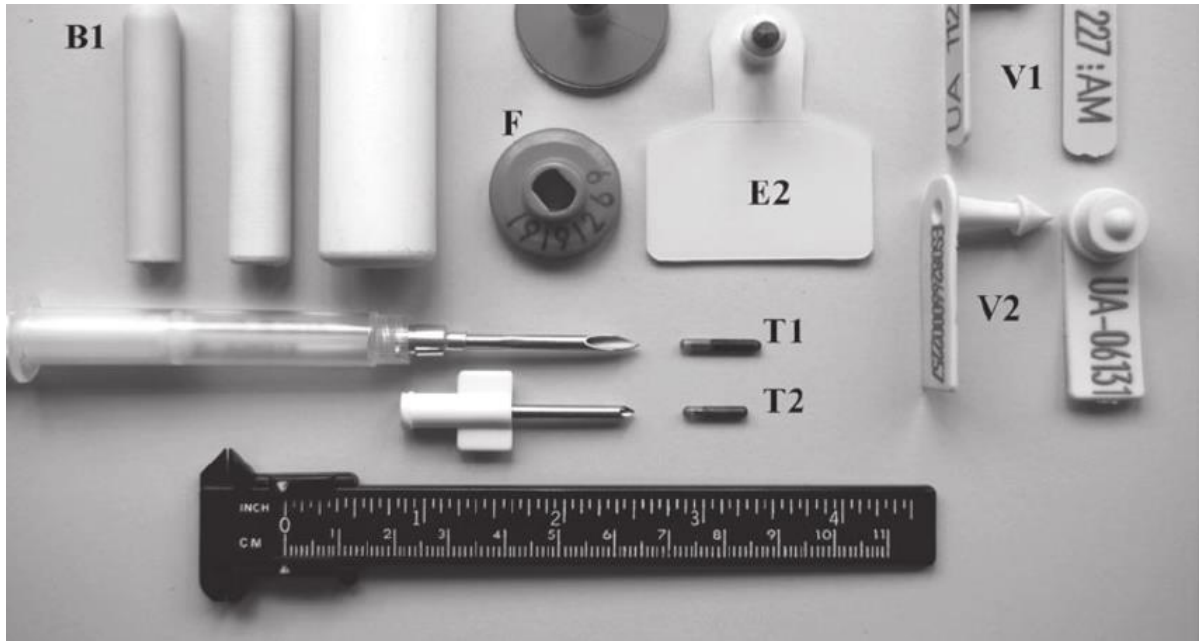
Animal tagging
Actions and outcomes

- Establish a standard tagging system
  - Type of tags
  - Numbering system
- Supply of tags
  - Where to get tags from?
  - Necessary equipment?
- Upskilling
  - How to apply tags properly
  - Using e-tags everyday
- Monitoring tag holding
  - What to do when finding animals with lost tags?

Animal tagging Example



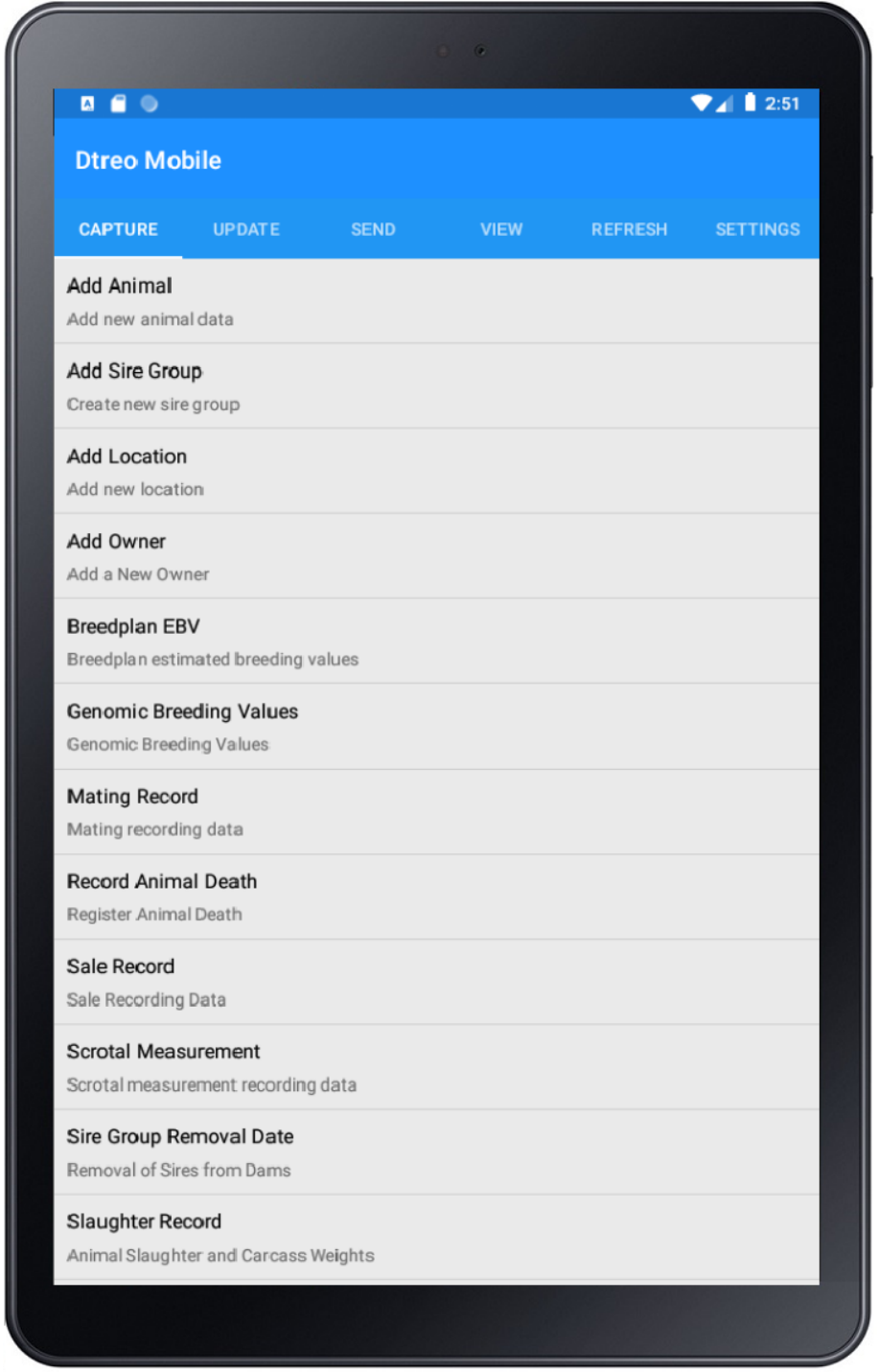
- Visual tag
- Flock code
- Unique birth number


B1
F
E2
V1
V2
T1
T2
UA-06131
227 :AM
INCH
CM

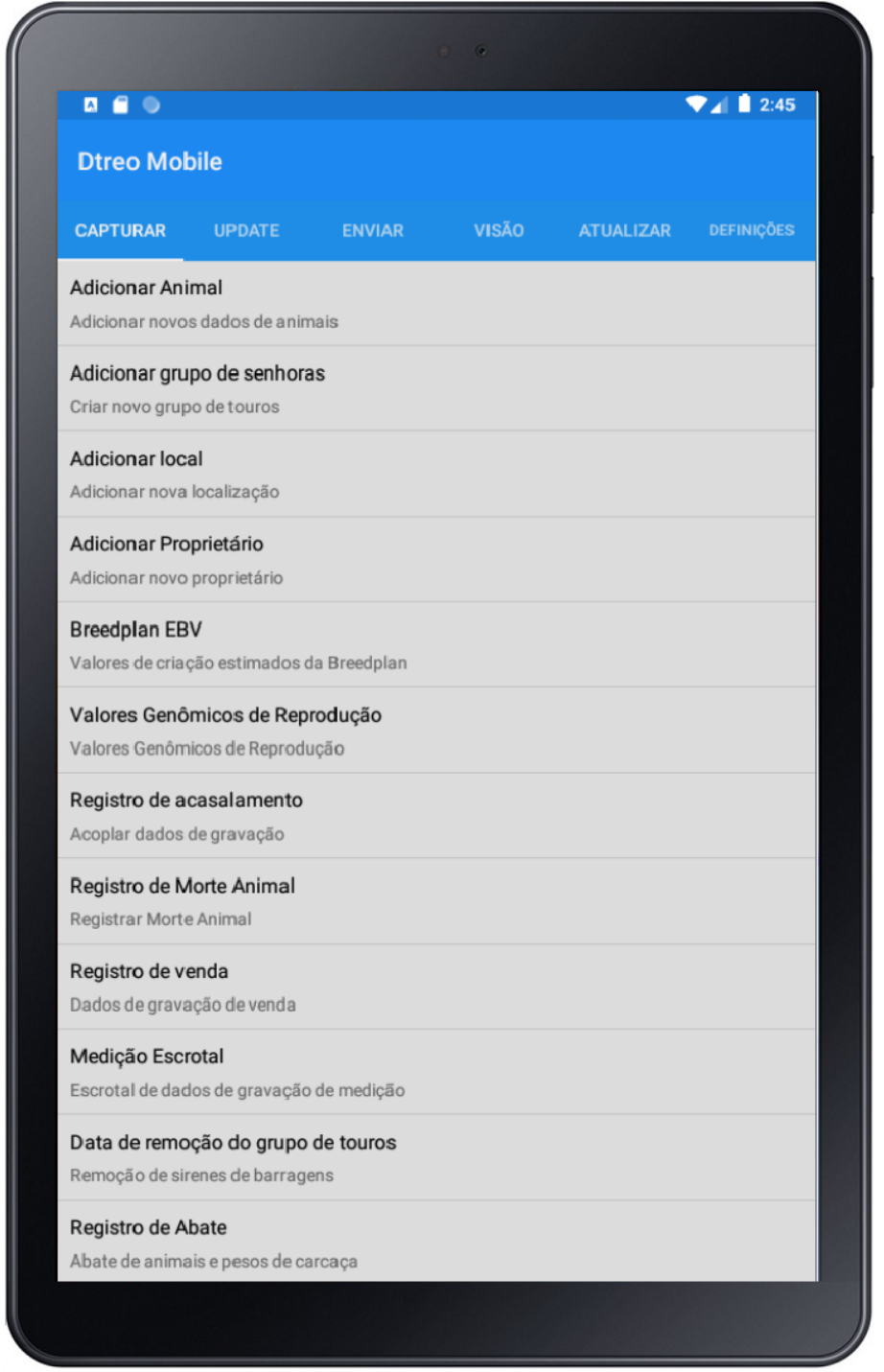

1
2
DATAMARS

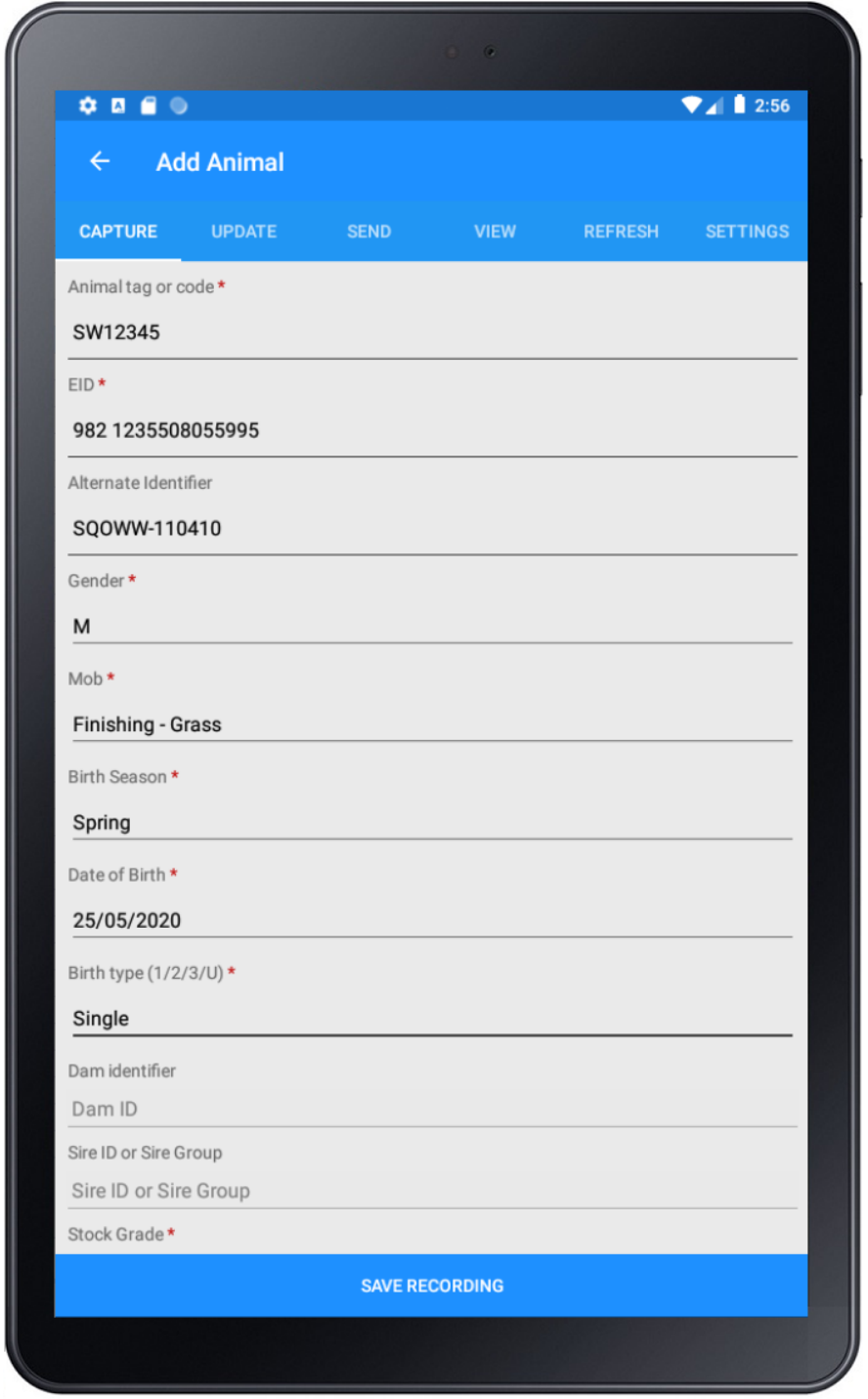

Rash, Eczema, Bed Sores
IE
0428390
06703A
06702H

Always evolving technology

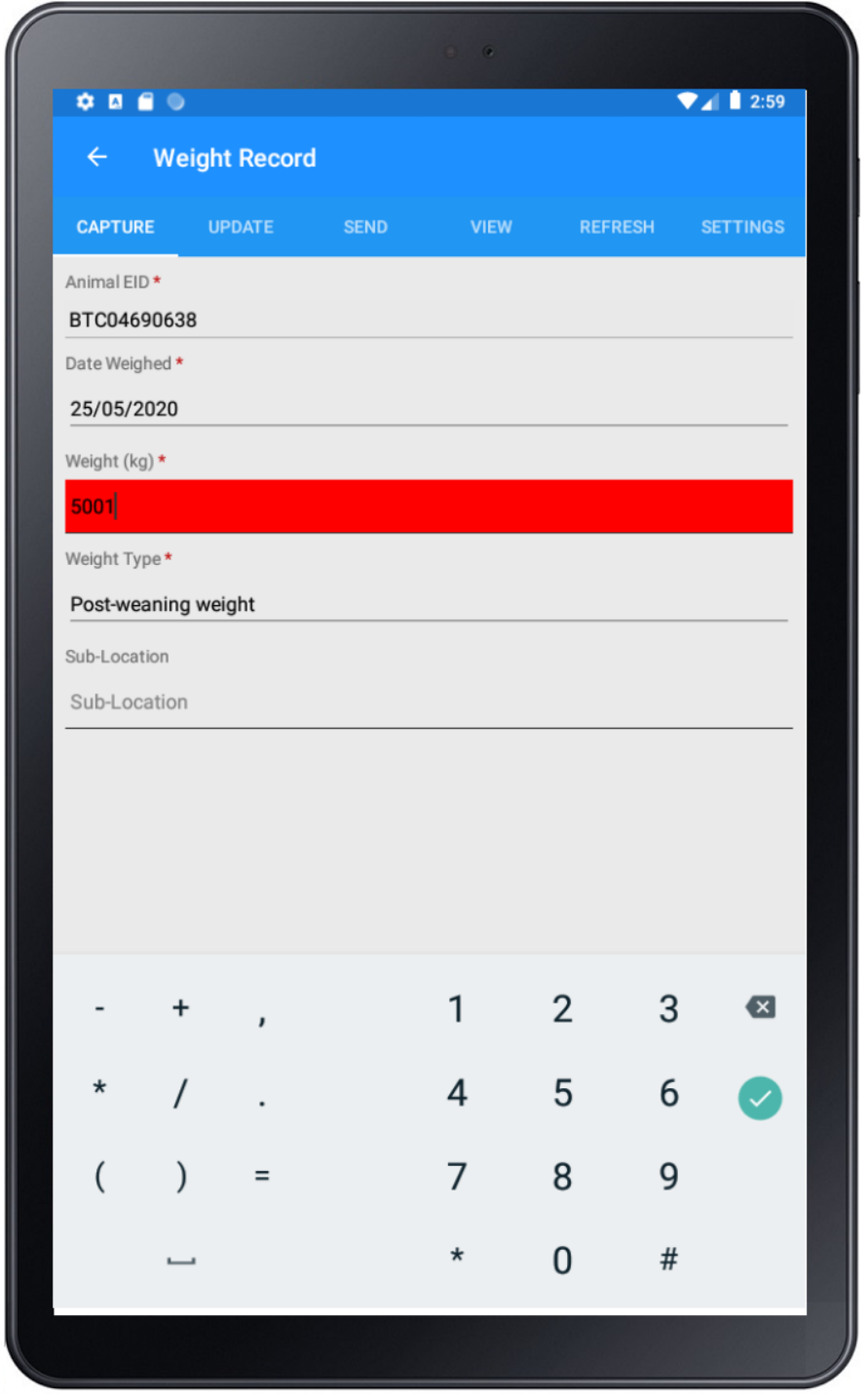


Online, offline, multi-lingual data capturing





Data integrity taken seriously



Enabling performance recording

- Deciding which phenotypes to record
  - Animal ID
  - Birth date
  - Dam id
  - Birth rank
  - Date of weaning weight
  - Weaning weight
  - Mating date
  - Body Condition score at mating
  - Liveweight at mating
  - Mating sire
- Establishing a phenotyping calendar
- Training and practicing basic phenotyping practices

Analytics - Dtreo

dtreo.io/App/Analytics

Dtreo | Azure | Dtreo | Power BI | Kaptivo | OneDrive | ODFB | DevOps | Paddock | Pivot | O365 | Work | App | AbacusDailys | CloudStaff

Dtreo — Home | Tutorial — Hello, Demo

- Home
- Analytics
- Modifications
- Edit Control Data

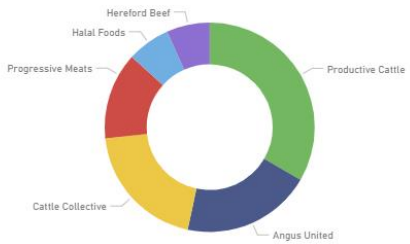
Reporting

- Show recorded event data
- Show recorded animals
- Show recorded animal data
- Show recorded owners
- Show Imported Data
- Show breed composition data
- Show breed conflicts
- Custom reports

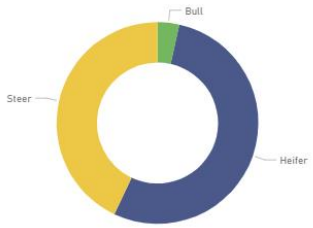
Create reports

- Select report type

Ownership



Sex Breakdown

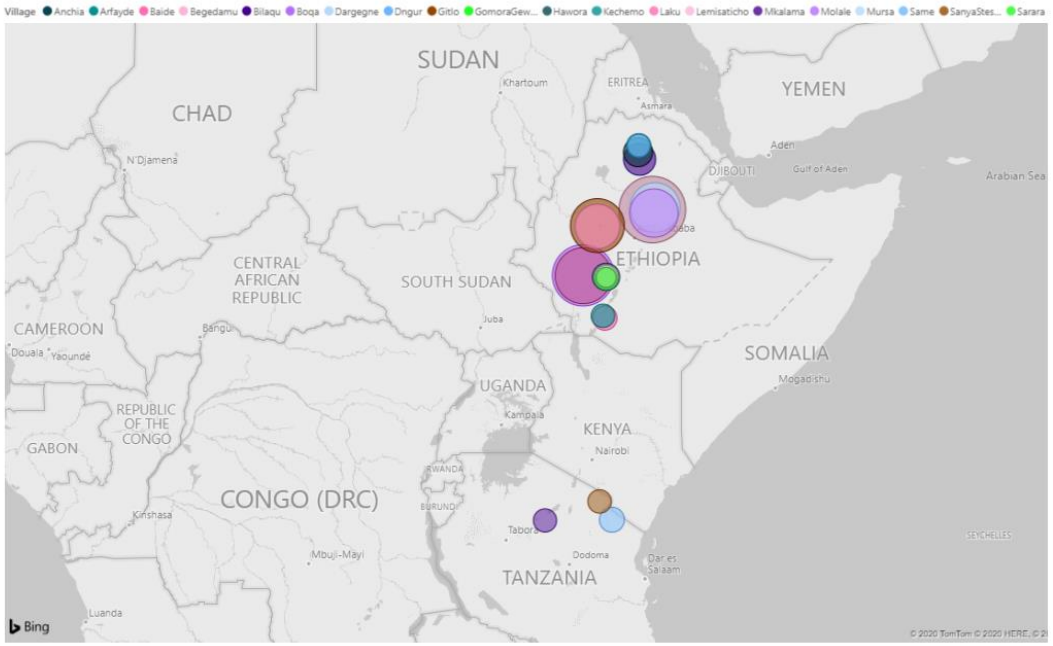


Quick Filters

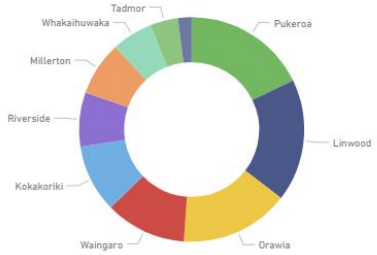
Fate: Alive

Owner: All

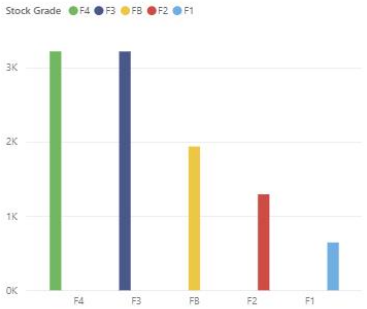
Animals by location



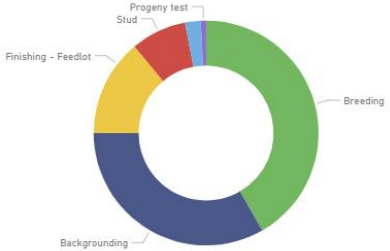
Animals by Location

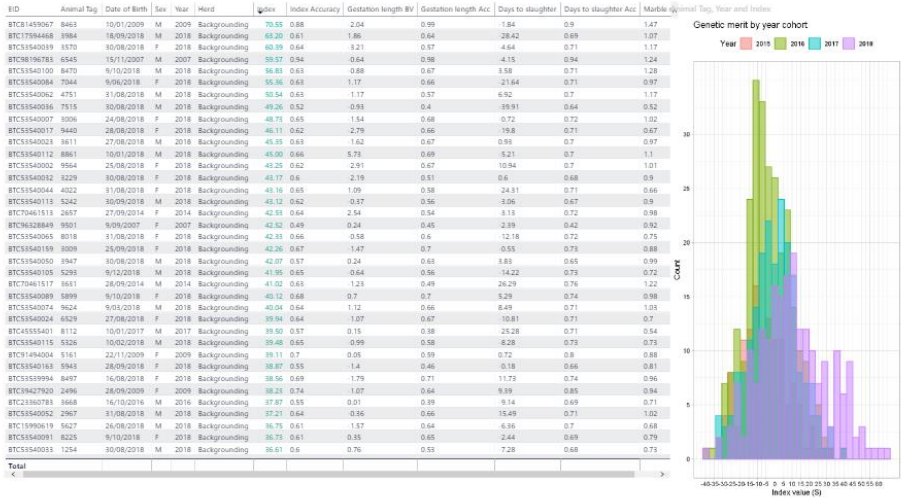


Stock Grade Breakdown

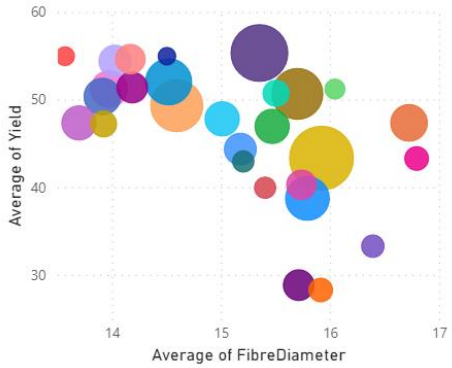


Herd Breakdown

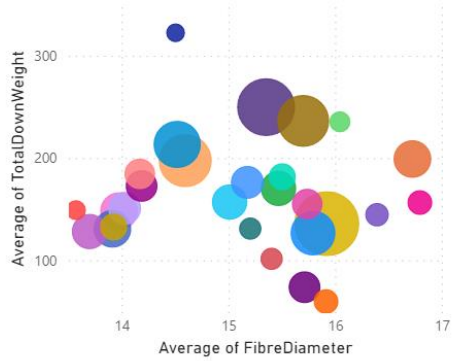




Average of FibreDiameter, Average of Yield



Average of FibreDiameter, Average of TotalDown



Creating useful information

Location Name

Millerton

Select Animal to Interact with charts and view weight history.

EID	Visual Tag	Herd	Location	Sex	Stock Grade	Breed	Owner	Date of Birth	Year	Age (Days)	# of Weight Records
BTC07183331	4523	Backgrounding	Millerton	Steer	Low	Wagyu	Cattle Collective	1/05/2018	2018	1098	7
BTC07328351	4995	Backgrounding	Millerton	Steer	Low	Wagyu	Productive Cattle	1/05/2017	2017	1463	8
BTC07328358	1577	Backgrounding	Millerton	Steer	Low	Wagyu	Progressive Meats	1/05/2017	2017	1463	9
BTC07328923	4517	Backgrounding	Millerton	Heifer	Low	Wagyu	Productive Cattle	1/05/2017	2017	1463	10
BTC07329778	8468	Backgrounding	Millerton	Heifer	Low	Wagyu	Progressive Meats	1/10/2017	2017	1310	9
BTC07388961	4444	Backgrounding	Millerton	Steer	Low	Wagyu	Cattle Collective	1/10/2017	2017	1310	12
BTC07619275	6814	Backgrounding	Millerton	Heifer	Low	Wagyu	Angus United	1/10/2017	2017	1310	9
BTC07634229	4977	Backgrounding	Millerton	Heifer	Low	Wagyu	Progressive Meats	1/10/2017	2017	1310	11
BTC07671723	8568	Backgrounding	Millerton	Heifer	Low	Wagyu	Cattle Collective	1/10/2017	2017	1310	9
Total											1305

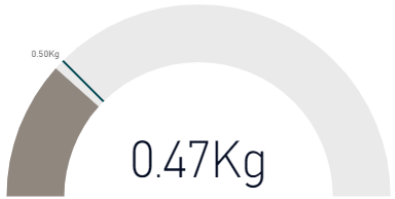
EID

BTC00000016

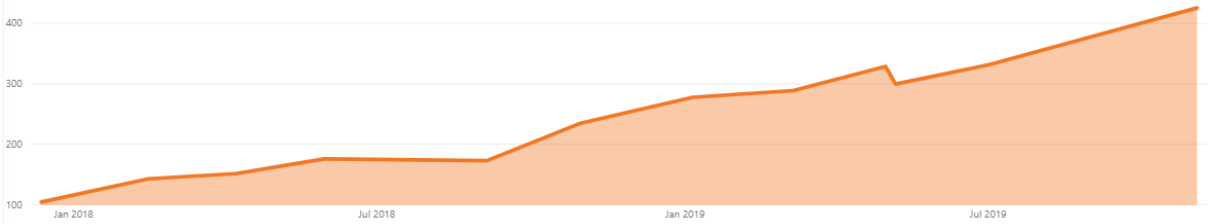
Visual Tag

1000

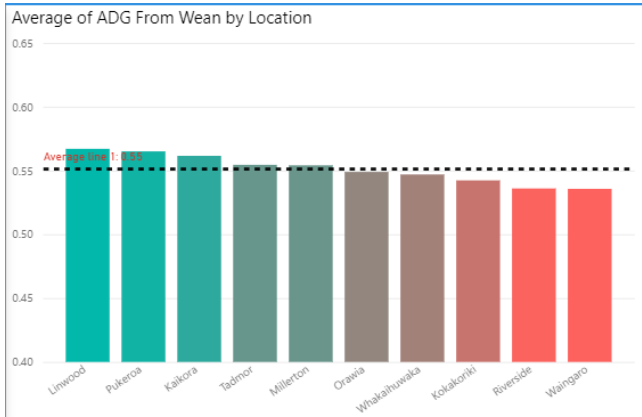
Average Daily Gain

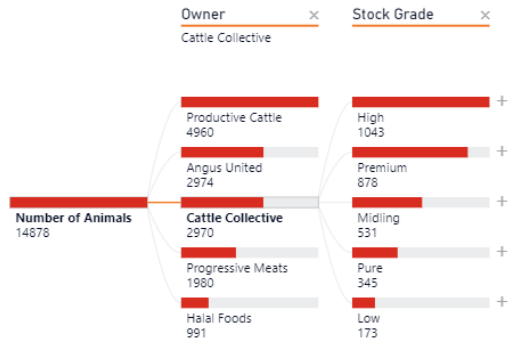


Weight by Date Weighed

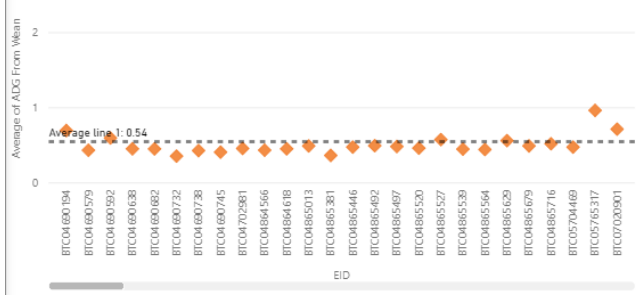


Average of ADG From Wean by Location





ADG From Wean Weight



EID	Weaning Date	Wean Weight	Latest Monitor Weight Date	Last Monitor Weight	ADG From Wean
BTC07119628	7/1/2019	98	10/31/2019	327	1.88
BTC09654075	7/1/2019	91	11/5/2019	329	1.87
BTC09212852	7/1/2019	107	11/1/2019	337	1.87
BTC10445182	7/1/2019	112	10/31/2019	340	1.87
BTC12106809	7/1/2019	94	10/31/2019	319	1.84
BTC09122611	7/1/2019	96	11/1/2019	321	1.83
BTC09424044	7/1/2019	98	11/5/2019	330	1.83
BTC30877819	7/1/2019	107	11/11/2019	349	1.82
BTC10482848	7/1/2019	90	11/5/2019	321	1.82
BTC30801437	7/1/2019	102	10/31/2019	321	1.80
BTC10483236	7/1/2019	94	11/1/2019	314	1.79
BTC09239326	7/1/2019	103	11/5/2019	330	1.79
Total					3,458.70

PIGBOOST

Owner and Location

Search

- Abraham Muchake
- Afuru Janepher Madam maam...
- AGNES KIYEMBA
- Agnes Nakiggwe (muwala wa I...
- Agnes Namuwenda. kabaseke
- AGUSTINE BYALUGABA
- Allen Nabanoba
- Andrew Ssebyoto
- Angwena mary (Othieno Robe...

EntityIdentifier

Search

- 104
- bp0000036
- BP000199
- BP001071
- OB
- PB
- PB 193
- PB000001
- PB0000012

Small Tag	104
EID	
Sex	Castrated
Date of Birth	1/10/2017
Teats	1
Dam	PB000012
Dam Teats	10
Sire	PB000654
Sire Teats	12
Litter Size	25K

Weight Records

13/07/2020 Date Weighed	80.00 Weight	Slaughter Weight Type
22/08/2020 Date Weighed	413.20 Weight	Monitor Weight Type
1/09/2020 Date Weighed	65.00 Weight	Monitor Weight Type
3/09/2020 Date Weighed	103.00 Weight	Pre Weaning Weight Type
3/09/2020	120.00	Slaughter

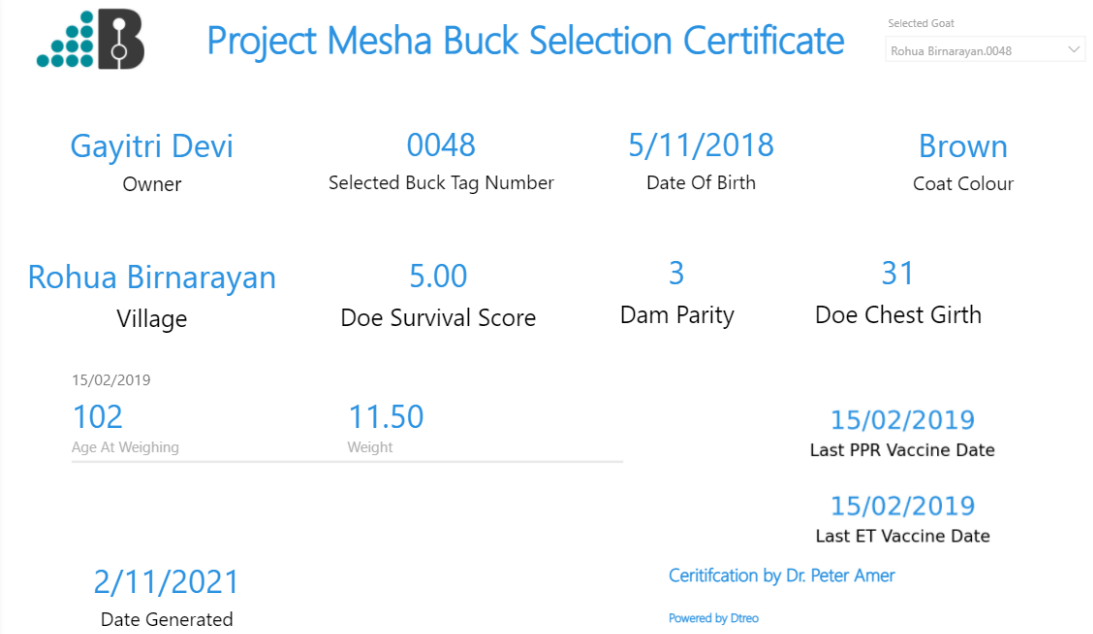
Vaccine Records

Iron Treatments

9/02/2021 Treatment Date	Iron Treatment Name
5/05/2021 Treatment Date	Iron Treatment Name

Creating useful information

Creating useful information



Summary

- Animal identification is critical to enable recording data and creating information
- Very important to define a tagging and an efficient identification strategy that reaches all farmers
- Livestock industries can benefit significantly from a well-establish animal identification policy
  - Monitoring performance
  - Creating industry statistics
- Market access and support to exports

Thank you!